

09/779,287 filed 2/8/01

Reply to Office action of June 7, 2004

REMARKS

This Amendment is respectfully submitted to place rejected claims of subject Application in condition for allowance. In particular, Claim 3 has been canceled, and Claims 1, 2, 5, 6, 11, 12, 14, 17 and 22 have been amended to more particularly point out and distinctly claim the novel subject matter of the invention.

Responsive to remarks of Examiner relating to a specific salt disclosed on page 2, lines 54 to 57, in the EP reference, the terms "halogen," "chlorine anion or" and "selected from the group consisting of chlorine anion and" have been deleted where present in Claims 1, 2, 5, 11, 12, 17 and 22.

Claims 1 11, and 22 have been amended to recite a step of "separating from the reaction mixture both an essentially organic liquid and at least a portion of the immiscible aqueous phase with oxidation products of one or more of the sulfur-containing and/or nitrogen-containing organic compounds".

Claims 11, and 22 have been further amended to recite, in the contacting step, "conditions suitable for reaction of one or more of the sulfur-containing and/or nitrogen-containing organic compounds and extraction of oxidation products from treated feedstock".

Claim 6 has been amended to recite "The process according to claim 1 wherein the recovering of product from the treated organic liquid includes use of at least one solid sorbent comprising silica, and at least a portion of the separated aqueous phase with oxidation products of one or more of the sulfur-containing and/or nitrogen-containing organic compounds is recycled to the reaction mixture."

Attention of Examiner is invited to Example 10 beginning at page 34, line 28, of Applicants' Specification. The recovered aqueous phase and the viscous brown oily phase were recharged to the reactor with a

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fresh charge of oxidation feedstock. The procedure of Example 3 was repeated except that the reaction was run for 2 hours at 60° C. The unexpected and unpredictable analysis of the product recovered after silica treatment gave 0.8 ppm sulfur and 1 ppm nitrogen. A band of
5 dark brown material was retained on the silica. The brown band was eluted from the column with methanol. On analysis it was found to contain 210 ppm sulfur and 100 ppm nitrogen.

Claim 22 has been further amended to recite that at least a portion of the recovered organic liquid is treated "with a suitable
10 immiscible aqueous liquid containing a solvent or a soluble basic chemical compound, to obtain a product containing less sulfur and less nitrogen than the oxidation feedstock."

It is the position of Applicants that Claims 1, 2, 4 to 19 inclusive and Claim 22, all claims now presented, are in condition for allowance.

15 103 Rejections

In outstanding Office Action, Claims 1 to 19, and 22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No 6,217,748 in the name of Shigeto Hatanaka, Osamu Sadakane, and Hideshi Iki (Hatanaka et al.), in view of EP 0 482 841
20 A1 in the name of Frances Mary Collins, Andrew Richard Lucy, and David John Harry Smith (EP 0 482 841 A1), and U.S. Patent No 3,341,448 in the name of John Frederick Ford, Timothy Arrowsmith Rayne and Dennis George Adlington (Ford et al.). Applicants respectfully traverse this rejection.

25 It is the position of Applicants that Claims 1 to 19 inclusive and Claim 22, are allowable over the references of record since these references fail to either teach or suggest the instant invention. Applicants believe that the rejections under 35 U.S.C. § 103(a) are not sustainable on the facts in this application.

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In view of the "132" affidavit of Dr. Gong, it is submitted that the Examiner's position with respect to a combination of steps from three (or four) different processes would result in the expectation of the improved product provided by Applicants' novel process is untenable.

5 As the affidavit of Dr. Gong states, the combination of steps for purification of petroleum derived streams generally does not product a purer product than fewer steps. For those who are generally skilled in the arts of analytical and organic chemistries, two processes cannot usually be linked together to produce a purer product. Therefore, a
10 novel process that provides an improved product is not obvious. For example, solvent extraction usually precedes an adsorption process. But, if the extraction unavoidably leaves behind traces of solvent and the traces of solvent cannot be removed, then this solvent will interfere with a subsequent adsorption process. Such solvents include
15 dimethyl sulfoxide, for example. When this solvent enters an adsorption column, it will immediately occupy the active sites of the adsorbent and immediately render the adsorbent ineffective. In this case, one cannot combine both processes to produce a purer product.

20 On the other hand, if water were used in a liquid-liquid extraction, the extracted product can be readily dehydrated to remove traces of water, and then the product can be subjected to an adsorption process without interference from water. Because water is in fact used in the process, we can couple a solvent extraction process with an adsorption process to produce a product of superior purity

25 Base on the amendments submitted, previously and herein, and Paper No. 16 (affidavit under 37 CFR § 1.132), Applicants urge that Claims 1, 2, 4 to 19 inclusive and Claim 22, all claims now presented, are in condition for allowance. Applicants respectfully request Primary Examiner Griffin to pass subject application for
30 allowance.

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Do not hesitate to contact Frederick S. Jerome whose telephone number is (630) 832-7974 (FAX (630) 832-7976) if additional assistance is needed regarding this paper or earlier papers for Applicants.

5 Applicants and their undersigned Attorney appreciate Examiner's attention and further consideration of this matter.

Respectfully submitted,



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